Commonwealth of Massachusetts

Goals for Offshore Renewable Energy and Request for Additional Information

December 28, 2010

Introduction

Massachusetts strongly supports the development of our offshore wind energy resources, which have the potential to decrease our reliance on fossil fuels, mitigate the impacts of climate change, and enhance our energy security. Additionally, the offshore wind energy is projected to generate thousands of clean energy jobs and create economic opportunities associated with research and development, manufacturing and installation, and long term operation and maintenance services.

Massachusetts is moving aggressively to enhance its nation-leading position in offshore wind energy development. In addition to the Cape Wind project, which will be the nation's first offshore wind project, highlights of the state's emerging offshore wind industry include:

- MA/U.S. Dept. of Energy Wind Technology Testing Center (WTTC), located on Boston Harbor, will be the largest wind blade testing facility in the world and the only facility in the United States capable of testing the next generation of blades when it is completed in early 2011.
- Governor Patrick's recent announcement of the New Bedford Marine Commerce Terminal, the first facility in the United States designed with the capability to assemble and construct offshore wind projects.
- Massachusetts-based MassTank will partner with a European firm to manufacture the monopile foundations and other structural steel components for offshore wind turbines, creating over 300 jobs.
- Siemens opened their North American offshore wind headquarters in Boston.
- TPI Composites, Inc., a leading global supplier of wind turbine blades, has expanded its operations from Warren, RI, to Fall River, MA, where they are constructing a wind blade innovation center that will support the company's manufacturing facilities around the world. The Fall River plant will serve as a center for development of advanced blade manufacturing and a launching pad for new wind blade products, making use of the WTTC.
- Two of the nation's leading academic institutions on wind research – the University of Massachusetts and the Massachusetts Institute for Technology – and the largest private nonprofit oceanographic institution in the world – the Woods Hole Oceanographic Institution.
- The Commonwealth, through the Massachusetts Clean Energy Center (MassCEC), is committed to funding an R&D program to reduce the cost of offshore wind. Specifically, MassCEC will partner with, and provide matching funds for, Massachusetts research institutions and global offshore wind industry leaders to win U.S. DOE funding in order to achieve the DOE's goal of reducing the cost of offshore wind 40 percent by end of this decade and 60 percent (to 7 to 9 cents per kWh) by 2030.

To develop offshore wind into a mature industry off the Massachusetts coast, the Executive Office of Energy and Environmental Affairs (EEA) has partnered with the Bureau of Offshore Energy

Management, Regulation and Enforcement (BOEMRE) to develop the Request for Interest (RFI) for offshore wind energy development in federal waters off the coast of Massachusetts. The RFI identifies a large geographic area with an excellent wind resource and water depths within the range of current and near term technologies.

To continue to expand on the significant economic, environmental and social benefits of offshore wind energy for Massachusetts, the Commonwealth expresses its interest in the development of up to 4 gigawatts (GW) of installed generation in federal waters off the coast of Massachusetts provided such resources can be developed in a cost effective manner.

The purpose of this companion document to the RFI is to ask respondents to apply their expertise not only to proposing individual generation projects, but also to put forward concepts that have the potential to support significant build-out of the RFI area for wind energy. In short, EEA requests not only responses that propose specific projects but also plans that describe various development scenarios for development of this wind resource area and the factors necessary to support them.

Achieving large-scale penetration for offshore wind energy will require advances in all aspects of generation and transmission systems. As discussed below, EEA recognizes that specific challenges associated with transmission technology and policy will shape responses to the RFI, and the extent to which respondents can provide detailed proposals. Nevertheless, EEA looks forward to receiving information that will advance development prospects and state policy goals.

Generation and Transmission

Unlocking the potential of significant wind energy generation off the Massachusetts coast (and the entire Eastern seaboard) will require advances in wind energy systems design, marine engineering and construction. The offshore wind industry recognizes the need to gain experience with design, installation, and operation of offshore facilities in order to achieve scale, maturity, and cost competitiveness. In addition, there is currently a range of foundation and turbine technologies that could be applied to offshore wind development, each of which may be suitable for certain site conditions. The broad scope of the RFI is intended to provide as much flexibility as possible for potential developers to identify areas that suit a given technology, and lay out a plan for development over time as lessons are learned and technologies developed.

Offshore wind development will also require upgrades to the onshore electrical grid that serves the state and the region. But planning for such upgrades suffers from a classic 'chicken and egg' problem: improvements to transmission infrastructure require knowledge of potential future generation, while planning for offshore generation requires knowledge of potential future transmission structure and capacity. Through this RFI, the Commonwealth encourages financial, development and transmission interests to evaluate current and future technological and economic opportunities and constraints and propose integrated, market-based development scenarios for optimizing the relationship between offshore wind and onshore transmission and distribution.

Responses to the RFI and this supplement will be reviewed by the Massachusetts Executive Office of Energy and Environmental Affairs. In assessing policy options, the Commonwealth may seek the assistance of third parties and may provide the RFI responses or information contained in responses to such third parties. Specifically, the Commonwealth is considering having transmission planning analyses conducted by ISO-New England that would provide additional information on network transmission options and potential costs.

Responses to the RFI should include a description of: (a) the physical configuration of the transmission system, and (b) the ownership structure of the transmission system. For example, with respect to physical configuration, respondents should discuss whether they anticipate one or more radial line(s) or a network system (i.e., connected to the grid in more than one location). Similarly, respondents should discuss whether they anticipate that radial line(s) or a network would be sized to support only the proposed wind energy project(s) or to accommodate future projects.

With regard to transmission, we recommend that the potential lessee(s) review the report entitled "Strategic Options for Investment in Transmission in Support of Offshore Wind Development in Massachusetts," dated January 8, 2010. (http://www.masscec.com/index.cfm/cd/FAP/cdid/11695/pid/11151)

In addition to describing their plans for connecting projects to the on-shore grid, respondents should include a description of the location(s) at which they intend the transmission line(s) to connect to the on-shore grid, and a description of the upgrades, if any, that will be needed to allow the on-shore grid to continue to function reliably with the addition of the generation from the wind energy project(s).

With respect to ownership structure, respondents should describe whether the transmission system would be owned by the developers of the wind energy project(s) or otherwise on a merchant basis, by a traditional transmission company, or through some other arrangement. Respondents should describe the funding assumptions on which plans for proposed project(s), including the transmission system, are predicated.

Finally, responses should also provide preliminary description of infrastructure and locations for assembly, supply chain and maintenance operations.

Responses should be submitted directly to the Massachusetts Executive Office of Energy and Environmental Affairs, Attention MA RFI on OSW, 100 Cambridge Street, Suite 900, Cambridge, MA 02114 or via email at offshorewind@state.ma.us .